# IOT connected with e-learning

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## **ABSTRACT**

In the networking field, Internet of Things (IoT) can be referred to technological e-learning advancements. It is seen that through the internet, nowadays it becomes easier to be connected with the real world affairs by being acknowledges about the all-around happenings. Even everyone is aware about communicating with each other all over world. 'Things' can be specified as the objects which are connected through internet. Over the internet, the specific kind of interconnection of different things can serve its capability through the information which can be utilized in receiving and sending of evaluated data. It is said to be specialized in almost every field that can be determined in numerous manner for implementing wide range of applications format. Wide ranges can be mentioned aseducation, business, transportation, agriculture, healthcare and management. In a generalized manner, in this article specifically and mainly the discussion is being held over the Internet of Things (IoT). Specific emphasis on E-learning is said to be implemented as a source of information applied for its readers. By the utilization of smart learning as the IOT the smart techniques can also be represented shown by e-learning methods.

**Keywords:** Internet of things, E-learning, Machine to machine interaction, Context-awareness, and energy independency.

## 1. INTRODUCTION

Two distant 'ARPANET' computers were also seen to exchange the first message between them since last 47 years. After that, Tim Berners Lee invented stated specific things for the evolution of the world and discovered (www) the World Wide Web. In the way of retrieving, at its primary stages, posting information and being updated with the world wide affair received lots of appraisal by the help of systematic organized structure called the World Wide Web (www). Along with the composition of hyperlinks to show other pages, the WWW doesn't serve any kind of efficiency more than that of few kinds of static web-pages. WWW was directed to obtain specific kind of valued information gained by browsing which also satisfy the utilities osurf other pages also along with that. By the passing time, the whole scenario got altered due to the emergence of web 2.0. before that when people use to surf web 1.0, they use to site not more than reading some specific information via the particular website along with that they could also move from one page to other by the hyperlinks suggestively.

#### 2. OVERVIEW OF IOT CONNECTED E-LEARNING

Nowadays, it becomes easy for a website to be interacted and being served in a conventional mannerby its user. Over the internet, the specific kind of interconnection of different things can serve its capability through the information which can be utilized in receiving and sending of evaluated data. Applications like YouTube, Flickr, Facebook and many more can be served as the example of web 2.0 (Brun et al. 2018). Currently, the internet users are familiar with web 3.0 as a semantic web for surfing in an advanced manner. The availability of the information can be interpreted in an intellectual manner in web 3.0 present in the computers. Web 3.0 can disseminate as well as create the information provided by its data sources. Internet can be secured as the provided sources which are helpful for the connection and communication of the people with one another, helps to share disseminate and gain the fruitful information, then it can be for sending the information and also from the advanced version video conferences can also serve its availability. Apart from man-to —man communication, the promotion of web 3.0 can be beneficial

towards the man to machine conversation. Web 3.0 satisfies machine ton machine interactions also. It is considered as an example that elaborates an interaction between machine to machine even though by the interacted thing can be said to signify as an air conditioner and a temperature sensor.

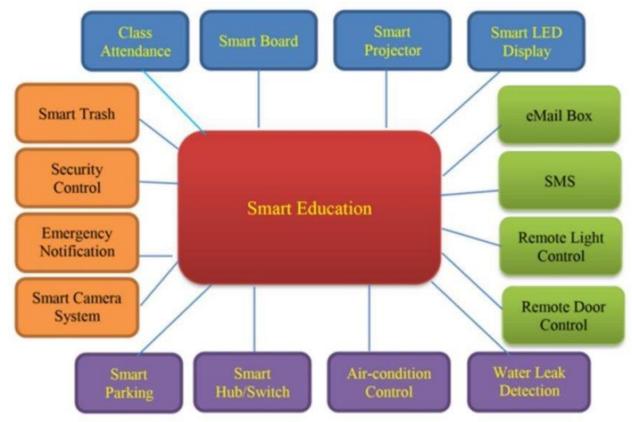


Figure 1: Use of IoT in e-learning

(Source: Oda et al. 2017, p.230)

The temperature of the room is raised or not can be measured by the temperature sensor that constantly monitors each and every step of it. If it is noticed by the temperature sensor that the room's temperature got increased then it sends specific kind of signal to the air conditioner to on the switch in an automatic manner. An indirect interaction is said to be proposed by this kind of reaction by the server, where it can enact centrally. Again an example is shown that at its minimum level when the temperature again decreases then the temperature sensor will act according by sending the signal to the air condition by this time switch it off. M2M is a technology utilized by IoT. Machine to machine interaction can be considered for M2M.Two kinds of any of the real world objects can be stated as the universal link for the M2M interaction. Linked over the internet, IoT can be simplified as interrelatedness of 'things' (Ajaz Moharkan et al. 2017). Laptop, a bulb, a TV, an AC, a mobile phone, or even a plant even a fridgecan be stated as an object that can be recognized as IoT. By the utilization of specific sensors, any kind of object can be transformed as 'smart object'. While utilizing specific sensor they are also accustomed with thesmart objects that allows the communication to be done via IoT or internet of things.

# 3. APPLICATIONS OF IOT AND CONNECTED E-LEARNING

Intellectuality that link things in between them and binds with a network is called the Internet of Things (IoT). It embeds actuators and sensors that are utilized for collecting data and can be shared with the help of many more things. The concept of Internet of Things can be predicted as a forward step taken ahead in the favor of (IoE) Internet of Everything. All the things according to the firm 'Cisco' they are familiar to the world of (IoT) internet of things. Context-awareness, energy independency and increased power processing shows the strong connection that evaluates network which links the things to connect with internet (Abbasy and Quesada 2017). It soon becomes (IoE) internet of everything by producing all the things altogether additionally. In its later sections, the article composition will say about the IoT in

briefly. Here in this article the discussion will be of the specified process of e-learning and along with that the contribution of internet of things IoT in this method.

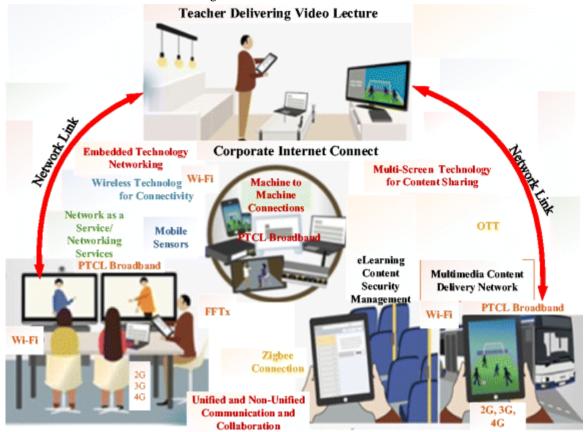


Figure 1: Process of using IoT in e-learning

(Source: Pervez et al. 2018, p.793)

On the specific subjects, this section can be served by its quotation of earlier works. In accordance with Cisco, (IoT) the Internet of Things can work by following the linked sequence signified for network connected things. Energy independence, context awareness and raised power processor can be additionally enacted as those kinds of things that can be processed as IoT and then becomes internet of everything (IoE).99.4% of the specific physical objects, in accordance with the research of IoT can be signified for the same (Bayani et al. 2017). IoE are said to be linked with the whitepaper that includes the saying, as a tremendous evaluation towards connecting intelligent network connections which allows all the other network connections to be connected. Some of them are stated in the view of education system to be connected with internet of things across the all over world. Impact to be served via its potentiality, IoE is served all over the world to make the strong link with the education system. IoT serves its necessity in the academic field by providing the student a basic knowledge of engaging themselves in the procedure of learning by some motivational values. IoT enables them to survey unique analysis towards mastery fields of education. Somehow, the benefits can be realized by connecting with its people, the specified procedures, the raw data and the things that can be connected with the liability with the constant access by serving the guarantee. Both the educators and the policymakers are needed to be well-prepared to fight against the exploitation by understanding the potentiality of the served risks. GSMA stated that life enhanced services can be enabled by the help of IoT. Some of them say that in education system the significance role of IoT can be specified as mobile-enabled solutions (Kalashnikov et al. 2017). It is required and beneficial for the educators learning procedure that meets up with the necessity of each student to be fulfilled. All over proficiency levels can be improved when it is connected in the view of physical or virtual classrooms. IoT makes efficiency in learning by physical or virtual classrooms that serve more convenience and accessibility. Ru Xue et al. stated that IOT can be enacted as a backbone for smart environments. It initiates the recognition and identification of the objects for the smart environments.

The adaptive functionality can serve the retrieving of the information via internet for facilitation. While being only connected with the internet, all learners are approved for being acknowledged about the sources of information. Wide ranges can be mentioned as education, business, transportation, agriculture, healthcare and management. In a generalized manner, in this article specifically and mainly the discussion is being held over the Internet of Things (IoT). Specific emphasis on E-learning is said to be implemented as a source of information applied for its readers (Njeru et al. 2017). It is signified that 25 students are assumed to be enrolled in a same courses as a research to be recognize as Jorge Gomez. It can be specified to be maintained with both the groups. Traditional methods were also taught under the similar group as an internet of things to be utilized as an interactive system by its community. Internet of things can be recommend as the subject that can be applicable as a device to be supportive towards the procedure of teaching. By this manner, the improvement can be determined via performance that can be considered under the academic prospective. It becomes significant by conducting various kinds of tests that signifies e-learning connected via internet of things (IoT).

## 4. ADVANTAGES

There are almost in each and every field, IoT can be suggested as the revolutionary concept. Its applications can be satisfied within the conceptual basis of education, transportation, agriculture, healthcare, business, management and many more. Applications of IoT can be structured in the following manner:

- I. **Healthcare:** Patient monitoring, Doctor tracking, Personnel tracking, Real-time patient health status monitoring, Predictive expertise information to assist doctors and practitioners.
- II. **Logistic and retail**: Smart Product Management, Supply Chain Control, Intelligent Shopping Applications, Item Tracking and Fleet Tracking.
- III. **Smart Transportation**: -On-demand traffic information can be segmented via real-time dynamic assumption that can be assumed via smart transportation. It covers the optimization through the shortest-time period covered via travelled path (Bhatt and Bhatt 2017).
- IV. **Smart Home**: Intrusion Detection Systems, Water Usage, Remote Control Applications, Energy Usage.
- V. **Environmental Monitoring**: Waterways, Industry Monitoring, Noise Monitoring and Air Pollution.
- VI. Agriculture: Soil Moisture Management, Compost, Irrigation Management, Green Houses.

## 5. RELATION BETWEEN E-LEARNING AND IOT

Prasanna (2018) stated that the mode specifies to be active in an 'electronically' served manner; the E-learning can be referred as the modified version of learning. The indulgence can be taken as the utilization where the involvement of the internet is suggested. Students as well as the teachers are benefitted by this kind of technique that enhances the procedure of E-learning. E-LEARNING process initiates the efficiency that becomes productive and fruitful for them. More interesting learning can be done via help of E-learning where the students as well as the teachers can interact among them in an efficient manner. Process of e-learning can be more productive if it is done via IoT. Animations, online tutorials, study materials via virtual classrooms, video lectures and many more can be victimized as an e-learning procedure. Somehow, it can be significantly observed that the way followed by the IoT makes it efficient in learning. Possibly it can be done through physical or virtual classrooms that serve more convenience and accessibility towards e-learning.

## 6. ENVIRONMENTS FOR SMART LEARNING

With the observed results the conclusion is very clear that the innovative teaching methodologies outperform the traditional classroom teach

#### 7. CONCLUSIONS

The concept of Internet of Things can be predicted as a forward step taken ahead in the favor of (IoE) Internet of Everything. All the things according to the firm 'Cisco' they are familiar to the world of (IoT) internet of things. Context-awareness, energy independency and increased power processing shows the strong connection that evaluates network which links the things to connect with internet. All over proficiency levels can be improved when it is connected in the view of physical or virtual classrooms. IoT

makes efficiency in learning by physical or virtual classrooms that serve more convenience and accessibility. Process of e-learning can be more productive if it is done via IoT.

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